

How to live sustainably and chemical-free

Developed by Nina Stick



Figure 1. Organic chemical free gardening. Source: The Essentials Store.

An initiative of

Householders' Options to Protect the Environment Inc.

www.hopeaustralia.org.au

(Edition 1.3 --- October 2022)

Contents list

Item	Description	Page
	Front cover	1
	Contents page	2
1	Living in a chemical-free environment	3
	Toxic chemicals	3
	Fungicides and insecticides	3
	Volatile organic Compounds (VOCs)	3
	Phthalates	4
	Cleaning products	4
	Washing	4
	Cooking	4
	Personal care	5
2	How clean is your food?	6
	What to look out for	6
	Pesticides and herbicides on food	6
	Genetically modified (GM) food	6
	What you can do and impact on the environment	7
	Regenerative agriculture	7
	Community gardens Australia (CGA)	7
3	Organic and biodynamic certifications	8
	The National Association for Sustainable Agriculture Australia (NASAA)	8
	Australian Organic Ltd (formerly Biological Farmer's Association (BFA))	8
	U.S. Department of Agriculture (USDA)	8
	Demeter certification	8
4	The dangers of genetically modified organisms (GMOs)	9
	What GM plants have been cultivated in Australia	9
	False claims	9
	Quality	9
	Regulation and labelling	9
	Doctors warn about GM food	10
	Government regulations about GM technologies in Australia	10
	Gene Ethics Network	10
5	Healthy soils	11
6	Sustainable gardening habits	12-13
7	Reducing waste	14
	Fashion	14
8	Water saving tips	15
9	Reducing emissions in and outside of the home	16
	Electricity	16
	Transport	17
	Superannuation	17
	Food	17
	References	18

1. Living in a chemical-free environment

Toxic synthetic chemicals have entered our homes on every level. Unfortunately, many are unaware that products can off-gas (evaporation from hard surfaces), especially newly bought ones, such as new cars (that new car smell is off-gassing). Many home products contain and have been treated with a myriad of toxic synthetic chemicals, such as fungicides, insecticides, Volatile Organic Compounds (VOCs) and plastics, such as phthalates, just to name a few. From the time when a home is constructed, through to the daily living in the home, over 60,000 chemicals are used. Most chemicals are not tested rigorously for health and safety. Fragrances (phthalates) are also added to mask unpleasant chemical smells. Exposure to these chemicals alone and in combination (of which health effects are largely unknown), attacks the nervous system and can result in unexpected, undesirable and unexplained diseases. Indoor air quality has become a public health issue. These effects are amplified in an unventilated environment. Too much time spent in these environments could result in Sick Building Syndrome, which has been recognised by the World Health Organisation. Symptoms are allergic and asthma-like. Could this partly explain why allergies and asthma are on the rise? So, it seems worthwhile to protect your health, while also protecting the health of the environment by reducing the “chemical load”, with a few simple measures that can be employed over time. Purchasing and acting consciously also results in a higher standard of living and a sense of empowerment. There are alternatives for everything these days. Don't be sold simply on advertising; just because a product is on the market or being marketed does not mean that it is safe.

Toxic chemicals

Fungicides and insecticides

Fungicides are toxic chemicals used to kill fungus and are found in treated wood products. Exposure can result in irritation and are toxic to the liver, skin, kidneys and central nervous system. Insecticides are also toxic chemicals used to kill a range of insects. For example, Diazinon, (found in insecticides used in flea treatments for domestic animals), has been linked to birth defects in humans and/or domestic canines. New carpets are also treated with these. It's best to avoid these products and use essential oils instead.

Volatile Organic Compounds (VOCs)



VOCs are a group of carbon-based chemicals which evaporate easily. They are highly toxic.

The most studied and widely used VOC is formaldehyde, often used in manufacturing as a preservative and used with other chemicals to make glue. This is the off-gassing smell that is usually experienced with new products, such as pressed-wood products. New carpets containing polyester are finished with formaldehyde and contribute to Sick Building Syndrome. They are also found in a variety of cleaning products, paint and conventional, and

off-the-shelf personal care. Formaldehyde is a probable human carcinogen and as it releases harmful vapours, immediate exposure can result in irritation and respiratory problems, or even death. Request furniture be made from non-toxic glues and sealants. Source organic, plant-based paint which also offers better coverage. Use plant-based oils and waxes, such as beeswax on floorboards, wood products and on leather shoes. Consider if replacing carpet is necessary and instead utilise non-chemical carpet cleaning methods such as steam cleaning.

Phthalates

Phthalates give plastics their flexibility and are largely used to manufacture PVCs found in cable wiring, upholstery, hoses and irrigation pipe, containers, personal care products and children's toys. Phthalates disperse out of products and contaminate the air and can cross the placenta and damage fetuses. Alarmingly, they are almost never listed on the ingredients on product labels.

Cleaning products

Cleaning and instilling fear have become "big business" and a multi-million dollar industry. This is driving the overuse of industrial chemicals in households and advertising promotes the idea that all bacteria are bad and should be removed/disinfected, which is false. Most conventional cleaning products contain harmful industrial chemicals in addition to the main active ingredient which is required to be visible on the label. For example, disinfectants contain VOCs and solvents, which depress the central nervous system, however these chemicals are not included on the labelling, so how is the consumer to know what other ingredients are in the product?! There is little to no regulation of chemicals used in cleaning products.



Cleaning does not need to involve a cocktail of toxic chemicals. The easiest way is to buy cleaning products from organic companies and to use reusable microfibre cloths. Also, use fewer products and keep it simple. Instead of toxic chemicals, use bicarbonate of soda, lemon juice, and eucalyptus oil, which are natural disinfectants. Refer to *Green Cleaner. Simple, effective and cheap cleaning alternatives for a safer and healthier home and planet* by Barbara Lord for solutions and other ideas. Some essential oils can also be used to kill mould. Avoid synthetic air fresheners and fly sprays, as not only are they unnecessary and wasteful, but they are also highly toxic. Use essential oils (aromatherapy), herbs such as basil, thyme and rosemary, and ventilate indoor areas.

Washing

Conventional off-the-shelf washing powders sold in supermarkets also contain a myriad of toxic chemicals. These are mostly petrochemicals, and although they may clean clothes well, impact human health and have a high cost to the environment and wildlife, particularly, in waterways. There are many safe and inexpensive alternatives on the market nowadays, such as soap nuts. Use bicarbonate of soda and lemon juice for stain removal or to target stubborn stains. Avoid fabric softeners and brighteners as these are unnecessary and place further pressure on waterways due to highly toxic chemical compounds. This toxic load, also containing nutrients such as nitrogen and phosphorus, can result in algal blooms of stagnant water systems in warm temperatures, which results in harming wildlife and has been responsible for mass fish deaths throughout recent human history. The "clean clothes smell" many have become accustomed to is chemical residue from washing, and can result in skin irritation and inflammation. Also avoid dry cleaning where possible as very toxic industrial chemicals are used in the dry cleaning process.

Cooking

Sourcing cookware where health has been an important consideration is important and there are many alternatives available on the market today. Avoid aluminium cookware and non-stick Teflon-based (plastic) pans. Purchase stainless steel pans and enamelled cookware. Some organic shops stock these. Also avoid cling wrap to store/cover food, which is a suspected carcinogen, as plastic is easily transferred into food. Use silicon containers instead. Avoid microwaving food as radiation is used to heat the food, use convectional heating instead.

Personal care

Personal care is not what it seems to be. The claims are vast. Hypo-allergenic. Natural. Anti-aging. Vegan. Certified organic claims require a logo of independent certification. There are two different definitions of organic: the chemistry definition and the agricultural definition. Most conventional products have very slick marketing claims, campaigns and packaging to lure the consumer into a false sense of security about their purchase, such as "greenwashing" of a product. The majority of these claims are unsubstantiated, unreliable, do not deliver on promises and the products are, in fact, a combination of toxic synthetic chemicals. The personal care industry is a business, and economics mostly preside over health and safety. The public are now starting to question (and have experienced) the health effects these chemicals can have on the human body and on the environment and are starting to realise that what goes on the skin, goes into the skin. Unless you are using the purest products on the planet, then you're most likely absorbing a minefield of health-compromising chemicals in the effort to look and feel beautiful.

Absorption of chemicals into the body can occur in three ways: via the skin, inhalation via the lungs, and ingestion via the digestive system (Dingle and Brown, 2018). Up to **475 toxic chemicals can be added to the body!** Unfortunately, many of the absorbed, potentially toxic chemicals are not flushed out of the body, so they accumulate, year after year, compromising health. The rate of cancer and degenerative diseases observed today demonstrates the damaging effect of synthetic ingredients used in skin, personal and hair care products (ONEgroup, 2010).

Toxins in personal care, in isolation, have been identified (even by the manufacturers) as known irritants, potential carcinogens, mutagens (damaging DNA) and teratogens (causing birth defects), to name a few (Dingle, 2018). Eighty nine percent of synthetic chemicals have NOT been evaluated for safety at all, nor do we know how toxic these chemicals are when combined together (Dingle and Brown, 2018). If there is one product that people will not leave the house without applying, it is antiperspirants and deodorants. Antiperspirants are distinguished from deodorants by the presence of sweat retarding agents, usually involving aluminium compounds, so adding further to the "chemical load". Sweat production is reduced but at what cost? Aluminium has been identified as a neurotoxin which can actively interfere with many of the chemical reactions in the brain (Dingle, 2018), such as Alzheimer's disease and epilepsy.

Product	Chemicals	Most worrying chemicals & some of their effects
Shampoo:	15	Sodium Lauryl Sulphate; Tetrasodium and Propylene Glycol - <i>possible eye damage</i>
Eye Shadow:	26	Polyethylene terephthalate - <i>linked to cancer</i>
Lipstick:	33	Polymethyl methacrylate - <i>also linked to cancer</i>
Nail Varnish:	31	Phthalates - <i>linked to fertility issues and problems in developing babies</i>
Perfume:	250	Benzaldehyde - <i>linked to kidney damage</i>
Fake Tan:	22	Ethyl/Methyl/Propylparabens - <i>possible hormonal disruption</i>
Hairspray:	11	Octinoxate, Isophthalates - <i>possible hormonal disruption, linked to change in cell structure</i>
Blusher:	16	Ethyl/Methyl/Propylparabens - <i>possible hormonal disruptions</i>
Foundation:	24	Polymethyl methacrylates - <i>possibly disrupts immune system, linked to cancer</i>
Deodorant:	15	Isopropyl Myristate, 'Parfum' - <i>possible respiratory problems</i>
Body Lotion:	32	Methyl/Propylparabens, Polyethylene Glycol, also found in oven cleaners - <i>possible hormonal disruption</i>

Figure 2. Most worrying chemicals and some of their effects. Source: ONEgroup/Miessence, 2010.

2. How clean is your food?

It is important to understand the difference between organic, biodynamic farming and industrial agriculture to nurture a healthy body. Conventional and organic and biodynamic farming have different consequences for the environment, the community and people.

What to look out for

Pesticides and herbicides on food

Glyphosate is the most commonly used herbicide globally (Bush, 2022). In March 2015, the World Health Organisation's International Agency for Research on Cancer found glyphosate, the active ingredient in Roundup, to be a 'probable carcinogen' (GM-Free Alliance Australia & MADGE Inc., 2017). The state of California recently listed glyphosate as carcinogenic. Meanwhile however, the regulatory and legal stances against glyphosate haven't changed (Bush, 2022).

The Maximum Residue Level (the amount of pesticide allowed in food) of glyphosate has increased. In the EU it was increased 200 times. Rats delivered non-alcoholic fatty liver disease after exposure to tiny amounts of glyphosate (below that allowed in food). Children are also being diagnosed with fatty liver disease. Glyphosate has been found in a wide variety of foods including baby food and has been detected in human urine and breastmilk. Industry (including Monsanto-Bayer) has known since the 1980s that glyphosate causes malformations in experimental animals at high doses, and knows that these effects can occur at low and mid doses.

Studies have shown that exposure to pesticides may increase the risk of dementia, Alzheimer's, cancer and other chronic conditions. Exposure to glyphosate has also been linked to immune system damage, kidney and liver damage and Hodgkin's lymphoma. Glyphosate may also impact the gut microbiome (Food revolution Network, 2022) and gut barrier, which has been patented as an antibiotic by Bayer-Monsanto. Thousands of lawsuits have been filed against Monsanto-Bayer by people alleging that their cancers were the result of exposure to Roundup.

There are also some alarming environmental impacts of using biocides (which are used to kill life). The release of glyphosate and other herbicides can be toxic and even lethal to fish, animals, pollinators, and a vast array of other life-forms (Food revolution Network, 2022). Herbicide spraying can also cause weed resistance and "superweeds". Monsanto-Bayer engineered crops are currently resistant to five different herbicides sprayed all at once, which results in spraying more and more on our fields (Food revolution Network, 2022). There is also the problem of herbicide drift. Herbicides can also impact genetic diversity and threaten the balance of life in the entire ecosystem (Food revolution Network, 2022).

Genetically modified (GM) food



Most GM crops are designed to be sprayed with Roundup. Despite industry claims that GM crops reduce the need for pesticides, the opposite has occurred with massive increases in pesticide use, such as in the U.S., which has also created GM "superweeds" which need increasing doses of weed killers and more toxic poisons to kill them. GM crops are being sprayed with 2, 4 -D, an ingredient in Agent Orange, as well as Dicamba and glyphosate (Roundup) mixtures (GM-Free Alliance Australia & MADGE Inc., 2017). See pages 9 & 10 for more information.

What you can do to minimise your impact on the environment

There has been a lack of accountability from corporate and consumers' sides so to best avoid pesticides and herbicides and GMO foods, buy products that are certified organic and/or biodynamic. The certified organic and biodynamic process prohibits the use of pesticides and herbicides, GMOs, irradiation and other synthetic farming inputs. Organic production also prohibits the use of antibiotics, so decreases the incidence of antibiotic resistance (Only Organic, 2017). Certified organic farmers also cannot give their livestock bioengineered food. Avoid factory farmed animal products. More than 95% of bioengineered crops become part of the feed for animals like cows, chickens, and farmed fish. Bioengineered fed crops go hand in hand with the use of glyphosate and other herbicides. The more livestock that are raised on these crops, the more herbicides will be turning up in our rivers, streams, groundwater, air and bodies. Conventional agriculture also causes more greenhouse gas emissions, soil erosion and water pollution, thus threatening human health. The toxic chemicals used harm local soil, waterways, air, important pollinators and ultimately, you. Organic and biodynamic farming conserves and builds soil health, and replenishes natural ecosystems, thus creating cleaner water and air and ensures no toxic pesticide residues are left behind (Food revolution Network, 2022). The use of glyphosate undermines biological systems. Field workers are also exposed to pesticides while picking, and can be forced to enter fields prematurely after spraying (Only Organic, 2017). Farmers are also becoming bankrupt due to the high cost of chemical inputs. Organic food is much better for your health and the environment.

Support a local farm by joining community-supported agriculture. When you support a local organic farmer, you're supporting a healthy working environment for your community. Organic farming is also healthier for those working on the farms.

Regenerative agriculture



Over more recent years farmers have started employing regenerative farming practices. Regenerative farming is about creating healthy soil with the idea that healthier soil will lead to healthier, more nutrient-rich crops and, ultimately, less carbon in the atmosphere by increasing carbon sequestration. There are Regenerative farmers support groups throughout Australia and across the world.

As farmers adopt regenerative farming methods, we can eventually rule out the use of glyphosate and chemical desiccants altogether. We can change how we approach soil and food system management and revitalize this

planet (Bush, 2022).

Community Gardens Australia (CGA)



Get involved with community gardens or grow your own food. Community gardens are essentially produce gardens. They can be found across cities, where the land is often supplied by local governments.

CGA is a member-based community garden and connects city farms and community gardens around Australia. It is a community based organisation linking people interested in city farming and community gardening across Australia (<https://communitygarden.org.au>) and visit Sustainable Gardens Australia (www.sgaonline.org.au/community-gardens/).

Figure 3. Ashwood High School Community garden. Source: Community Gardens Australia

3. Organic and biodynamic certifications

The best way to avoid toxins in products and food is to go organic and biodynamic. To be truly organic and/or biodynamic, the product or food must be labelled with an independent logo of organic certification and number. There are a number of certifying bodies in Australia and on products from overseas. The main ones are listed below.

The National Association for Sustainable Agriculture Australia (NASAA)



Australia's original organic industry association who provides market and industry development, advocacy, education, policy and advice services. This includes the NASAA Organic and Biodynamic Standard and Australia's most internationally recognised Australian organic certification label.

Australian Organic Ltd (formerly Biological Farmer's Australia (BFA))



Australian Organic is the leading peak body for the organic industry, a member-owned not-for-profit organisation that works closely with Government and industry to protect and promote the future of the Australian organic industry. AOL owns the Australian Certified Organic Standard (ACOS), the largest certification scheme within Australia which is used by most organic businesses. This standard and organisation is most well-known by the Bud trademark, recognised by 63% of Australian shoppers.

U.S. Department of Agriculture (USDA)

The department provides leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on public policy, the best available science, and effective management. They have a vision to provide economic opportunity through innovation, helping rural America to thrive; to promote agriculture production that better nourishes Americans while also helping feed others throughout the world; and to preserve the USA's natural resources through conservation, restored forests, improved watersheds, and healthy private working lands.

Demeter certification



Demeter certification is a guarantee for consumers that products come from biodynamic agriculture. Demeter stands for farmers who are striving for health and resilience on their farms, who nourish the soil, protect the environment, respect the well-being of their animals and produce nutrient dense food. It stands for those who value and respect their ingredients, treating them with care, tradition and time to create nutritious food. Demeter aims for regeneration at all levels to create living contexts and communities in which we can all thrive.

4. The dangers of genetically modified organisms (GMOs)

A GMO is:

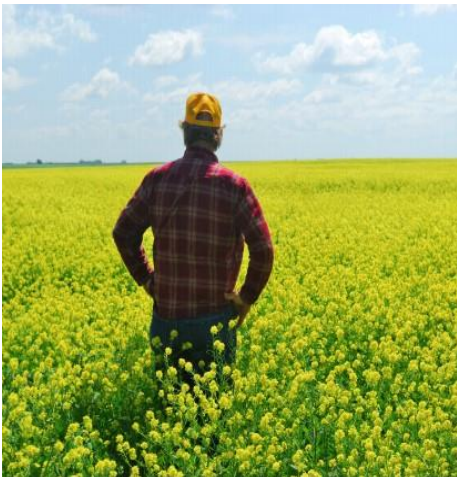
- A plant, animal or other organism that has been modified using gene technology
- An organism that has received modified traits of a GMO

The genetic make-up of an organism is modified to improve disease resistance, drought tolerance or resistance to herbicides and pesticides, or to produce an insecticide itself by inserting genes into another species. Various medicines, such as insulin, and several COVID-19 vaccines are either GMO or contain GMOs.

What GM plants have been cultivated in Australia:

- Canola
- Cotton
- Safflower
- Blue carnations (Dingley, 2021)

False claims



GM canola survives being sprayed with weedkillers, greatly increasing their use, while GM cotton is engineered to kill certain insects that eat the GM plants (GM-Free Alliance Australia & MADGE Inc., 2017). Growing GM crops does not reduce pesticide use.

Claims that GM soy, cotton, corn, canola and sugar beet (U.S.) will feed the world are false as they yield no more than conventional varieties and sell for less. The real goal is to control the world's food supply and to sell lots of chemicals.

Complex traits - drought and salt tolerance; nitrogen fixation in grains; more nutritious foods and higher yields have been promised but have not been delivered.

Figure 4. Farmer looking over canola crop

Quality

Many farmers are rejecting growing GM crops. Quality of GM products can also be lesser. In 2016, Burkina Faso rejected growing GM cotton when the poor quality of the cotton caused market rejection ruining its reputation for growing high quality cotton. It has returned to non-GM cotton production (GM-Free Alliance Australia & MADGE Inc., 2017).

Regulation and labelling

Most GM foods go unlabelled and the European Commission is secretly considering the full deregulation of certain types of GM crops.

Reports of birth defects and illnesses such as cancer in the GM soy growing regions of Argentina have massively increased. GM may also increase incidences of allergies as GM crops may create new allergenic proteins and toxins and anti-nutrients that have never existed before.

Doctors warn about GM food

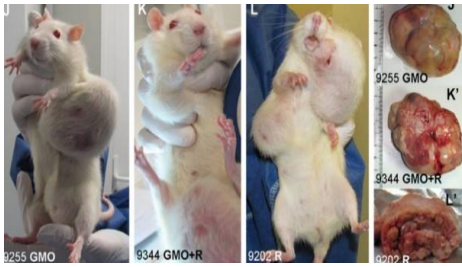


Figure 5. Kidney and liver damage in mice

In 2009, the American Academy of Environmental Medicine released its position paper on GM foods stating that “GM foods pose a serious health risk” and called for a moratorium on GM foods. It also cited that “GM foods pose a serious health risk in the areas of toxicology, allergy and immune function, reproductive health, and metabolic, physiologic and genetic health” (GM-Free Alliance Australia & MADGE Inc., 2017).

The European Commission considered seven policy scenarios. These scenarios are important because they form the basis for the upcoming regulatory impact assessment, which compares different policy scenarios with each other against a no policy action. These scenarios show that:

- The Commission wants to distinguish two new categories of GM plants: GM crops that “could also be obtained naturally or by conventional breeding” and GM crops that have “desirable sustainability impacts”.
- For GM crops that the Commission claims could be obtained naturally or by conventional breeding, the Commission is considering scrapping all GMO regulatory requirements. This includes the requirements for
 - pre-market safety assessment
 - product traceability across the supply chain
 - GMO detection method supplied by the developer of the GMO in question
 - GMO labelling.

These GM crops would essentially be regulated like non-GM crops, disregarding any risks to public health and the environment, the need of non-GM producers to rule out GM contamination, and the public’s right to know what is in their food (GMWatch, 2022).

Government regulations of GM technologies in Australia

The Australian Department of Health Office of the Gene Technology Regulator (OGTR) has the specific responsibility to protect the health and safety of people, and to protect the environment, from any risks posed by gene technology (www.ogtr.gov.au) (Dingley, 2021).

Many types of GM editing have now been accepted as non-GM and therefore will require no labelling either as seed or processed product or require any government approval. The Australian Government will invest up to \$15 million to determine the safety, efficacy and feasibility of implementing mitochondrial donation reproductive technology following a passing of Maeve’s Law leading to the acceptance of gene-edited babies.

GeneEthics Network



GeneEthics is working for a GM-Free future. Their vision is to envisage a safer, more equitable and more sustainable GM-Free society. They are a non-profit educational network of citizens and kindred groups. They want the precautionary principle, scientific evidence and the law rigorously applied to all proposed uses of GM technologies and their products.

Gene Ethics generates and distributes accurate information and analysis on the ethical, environmental, social and economic impacts of GM. Their education programs critically assess GM for the public, policy-makers and interest groups (<http://www.geneethics.org>).

5. Healthy soils

Soils are very important for food production; quality soils are needed for quality food. 97% of food comes from soil. Carbon content and microbes are needed for healthy soil. Healthy soil hold more water and it is important to rebuild hydrological cycles. There are rehydration strategies. With more water, more food can be grown. Organic matter helps to hold more water. The addition of compost acts like an activator for soil microbes. It is also important to have healthy soils to avoid flooding and other extreme weather events. Reverse erosion by replanting with local natives.

Do not spray herbicides and pesticides on plants and soil. Healthy soils also reduce the need for pesticides and herbicides.

Healthy soils can be achieved by:

- Building organic matter into the soil to help rehydrate landscapes
- Fostering levels of microbial activity in soils
- Using fencing to grow creek line vegetation

It has been suggested that there has been an explosion of disease relating to the loss of top soils in the 1990's. Good bio complete compost or worm castings (the excrement that comes out of the back end of worms) can re-introduce the missing microbes by providing food for them. These organisms enrich the quality of the soil through nutrient cycling, and, in the case of photosynthetic organisms (algae and photosynthetic bacteria) sequester (to lock away) carbon (Compost Foundation, 2022). The compost can be applied as a solid or in the form of compost tea or extract, along with a small amount of microbe food such as kelp and fish hydrolysate. This will bring the soil to life.

These 5 soil health principles will ensure that good living soil is maintained:

- 1) Keep litter on the soil year round (never let it be bare)
- 2) Ensure maximum plant diversity (never grow monocrops)
- 3) Ensure animal impact (integrate livestock into the operation)
- 4) Have something green growing at all times during the year (preferably, native species)
- 5) Minimal disturbance (avoid tillage)



Figure 7. Soil and soil types
Source: bing.com

6. Sustainable gardening habits

In order to garden sustainably, reduce water use and chemical inputs. Adding compost reduces the need for fertilisers and pesticides, improves water quality and conserves water and stores carbon in the soil. Other ways compost is beneficial:

- Compost helps nutrient cycling and soil aeration; soil health and productivity are dependent on organic matter
- Compost helps reduce evaporation losses of water from the soil.
- Natural chemicals in compost help bind pollutants, so as to limit their entry into watercourses.
- Compost helps reduce soil erosion through limiting the impact of heavy rainfall on the soil, and by general improvements to soil structure (Compost Foundation, 2022).

Do not use pesticides, herbicides, insecticides or fungicides. Use alternatives instead.

For flies, use:

- Fly papers
- Eco-bait fly trap
- Eco-bottle fly trap

For other insects, use

- Indoor night time insect killer
- Fly and mosquito protection plug-in
- Organic insect and bug sprays
- Dipel Bio-insecticide spray for caterpillars
- Insect traps

For pots, use:

- Mini insect indoor pot trap

Plant local native plants sourced from local native nurseries. Purchase from nurseries who are accredited with the Nursey Industry Accreditation Standard Australia (NIASA) so you don't introduce *Phytophthora* dieback and other pests, weeds and diseases into the garden. It is the national nursery industry Best Management Practice (BMP) program for production nurseries, growing media manufacturers and green-life markets and underpins the Australian Plant production Standard (APPS) – a holistic system designed to ensure a sustainable future for the Australian nursey industry. It has provided these businesses with a standard for professionalism and best management practice since 1994.



Figure 8. NIASA logo
Source: APPS

Other tips:

- Only use slow release fertilisers and compost to condition soil
- Reduce garden watering times and turn off sprinklers in winter
- Reduce or remove lawn and replace with local native plant species
- Mulch bare areas with pine bark. Be sure you know where the mulch is from so you don't bring pests, weeds and diseases into the garden.



Figure 9. landscape garden in WA. Source: Pinterest



Figure 10. Australian native garden. Source: Pinterest

7. Reducing waste



In 2016-17 Australia generated about 67 million tons of waste (Department of Industry, science, energy & resources, 2021) (Greer, 2021). Dispose of waste thoughtfully, especially hazardous waste, which usually needs to go through a separate process through local councils. Most waste can be easily diverted from landfill by applying the following practices:

- Refuse, reduce, reuse and recycle (Greer, 2021). Check with your local council about what can be recycled. Make sure items to be recycled are clean and free of food waste. Refuse the purchase of non-essential items (Dogan, 2022).
- Donate household items (Greer, 2021).
- Some parts of Australia recycle white goods. Check with local councils or Transition Towns. Also, look out for recycling stations. For example, in Perth, Western Australia, visit Perth City Farm, East Perth.
- Recycle old mobile phones through Mobile Muster.
- Recycle ink cartridges at Officeworks
- Look out for places that recycle batteries and light globes
- Buy products with less packaging and that are plastic-free. Instead, buy products with biodegradable packaging that is plant-based and GM-Free.
- Buy bulk food
- Use composting systems for food waste. The use of landfill space and incineration can be reduced by at least one-third when organics are recycled (Compost Foundation, 2022).
- Use Change for Containers schemes for bottles

Also consider that not all recyclable products are being recycled so again, purchasing less is better. Consider which items can also be used as multi-purpose, such as used food jars for bulk food storage and wooden boxes as plant pots.

Fashion

- Buy second hand
- Repair clothes (Greer, 2021). Some parts of Australia host repair cafes where items are repaired for free by volunteers. Check with your local council or Collective network for one.
- Seek fashion swapping events and go to swap meets
- Donate (Greer, 2021)
- Avoid disposal fashion
- Buy organic cotton, bamboo and hemp products, and look for other sustainable and ethical certifications

8. Water saving tips

Climate change is a local issue and local impacts are very real. Climate change is affecting water availability. Follow these tips to reduce your water use:

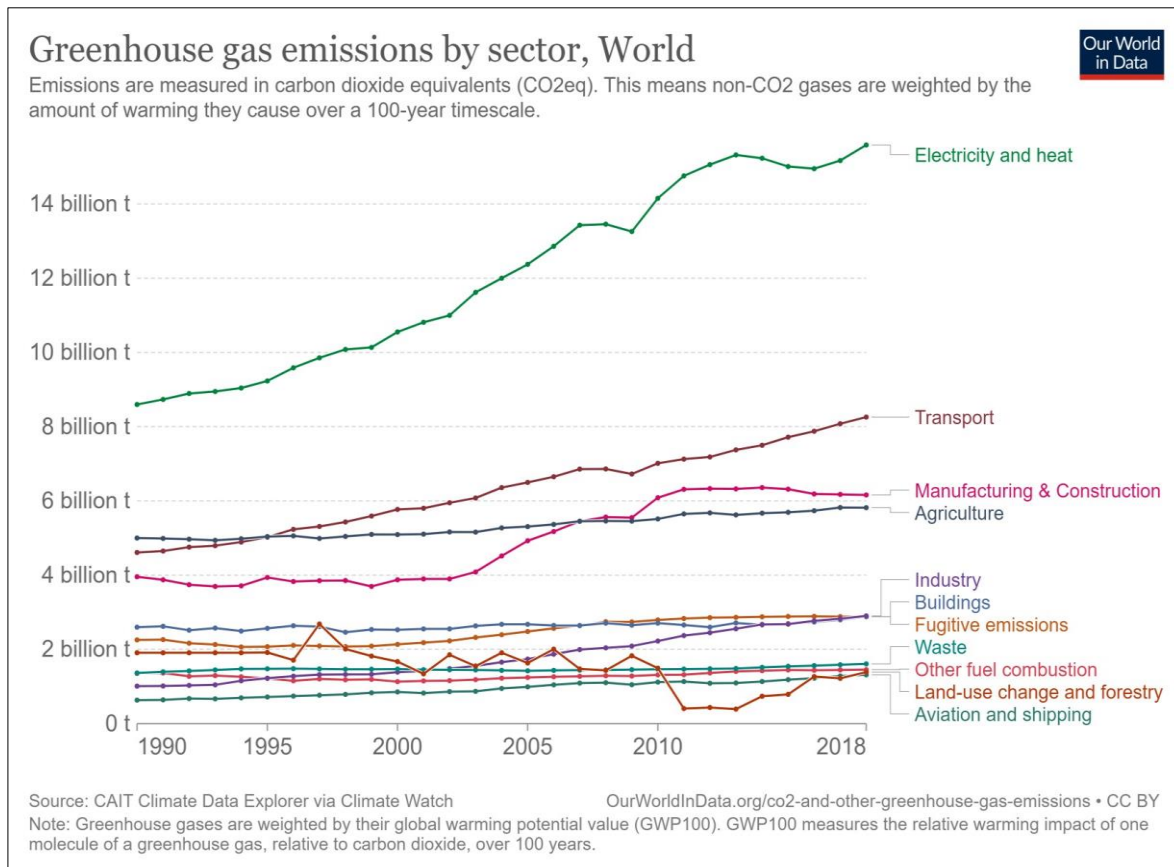
- Install a water tank and grey water system
- Turn off water while brushing your teeth
- Take shorter showers and install water saving shower heads
- Repair leaks promptly
- Use left over water to water plants (Greer, 2021)
- Wash clothes with a full load of washing
- Fill the dishwasher up before washing and use “Eco” option if available



Figure 11. Showerhead. Source: Publicdomainpictures.net

9. Reducing emissions in and outside of the home

Climate change is defined as a “change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels” (Oxford 2005). There are a multitude of reasons why we need to decrease our carbon footprint. Australia has the highest emissions per capita among developed countries (UniMelb 2015). Ultimately decreasing emissions of greenhouse gases through better transport, food and energy-use choices can combat these outcomes (WHO 2021).



Electricity

- Install solar panels and solar hot water systems
- Switch to LED bulbs
- Turn off power outlets, lights and appliances when not in use
- Use energy saving appliances. As fridges consume a considerable amount of household energy, only purchase sizes that meet the requirements for food that is needed to be cooled, as vacant spaces in a fridge use more energy to cool down than a full fridge. Adjust temperatures and reduce by a few degrees celsius.
- Investigate energy retailers and switch to 'green' energy
- Open windows in summer instead of using air conditioning. Adjust thermostats to reduce energy consumption.
- Insulate homes
- Leave mixer water taps in cold position
- Air dry clothes instead of using a dryer
- Avoid electric blankets which also emit electromagnetic radiation

Transport

- Avoid short trips in the car
- Carpool
- Take public transport where possible
- Switch to electric and fuel efficient vehicles and use e-bikes and e-scooters

Superannuation

Your super could be invested in fossil fuel production, coal mining, gambling, tobacco, and live animal exports to name a few. Consider making the switch to an ethical superfund by:

- Knowing where your money is invested and is aligned with your values
- Decreasing your overall CO₂ contribution
- Having competitive returns (Greer, 2021)

Food

- Reduce meat and dairy consumption or cut out altogether
- Eat seasonally and shop locally. Buy food grown without chemical input, such as pesticides and herbicides, buy organic and biodynamic where possible in season, such as at farmers markets. Organic farming has a smaller carbon footprint. Supporting local agriculture creates a sustainable food supply and helps with food security for your community.
- Check with your local council for community gardens
- Grow your own food at home (Geer, 2021)
- Compost food waste. Methane, which is twenty-five times more powerful than carbon dioxide as a greenhouse gas, can be significantly reduced through organics recycling (Compost Foundation, 2022).

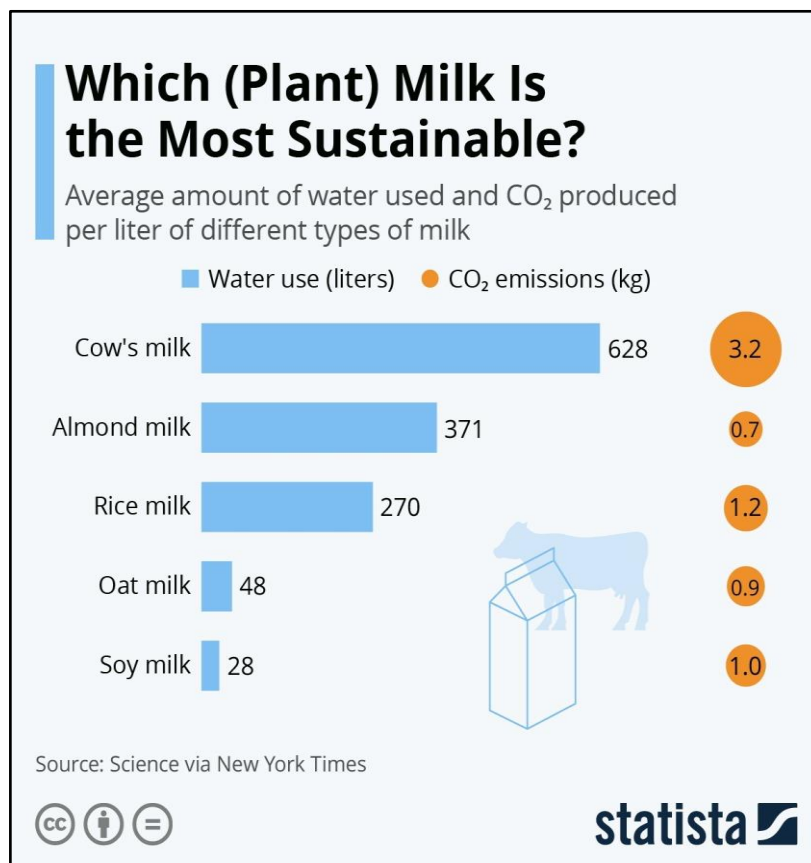


Figure 12. Sustainability of Different Milks comparison
Source: Buchholz, K 2021 Which Plant Milk is the Most Sustainable
www.statista.com/chart/22659/cows-milk-plant-milksustainability/

References

Ban Glyphosate. Keep harmful chemicals out of our foods petition (Dr Bush, Zach, 2022)

International Compost Awareness Week 1 –7 May 2022 (Compost Foundation, 18 April, 2022)

The truth about toxic cosmetics and personal care. Cosmetics and Personal Care (Dingle, Peter, 2018)

GM-Free Alliance Inc. HOPE e: news bulletin (Dingley, Jason, November 2021)

How Household and Small Businesses can be More Sustainable. HOPE Enews bulletin (Dogan, Lauren, July 2022)

What are GMOs or Bioengineered Foods? And are they Safe? <https://foodrevolution.org/blog/what-is-a-bioengineered-food/> (Food Revolution Network, 26 January 2022)

Failures of GM Crops. GMFAA and MADGE briefing (GM-Free Alliance Australia & MADGE Inc., September 2017)

EU Commission's secret policy scenarios show full GMO deregulation on the cards www.gmwatch.org/en/106-news/latest-news/20074-eu-commission-ssecret-policy-scenarios-show-full-gmo-deregulation-on-the-cards (GMWatch, 21 July 2022)

Helpful Hints - Energy Efficiency in the Home (Greer, Lili, October 2021)

MiTime 11 – Natural Beauty (ONEgroup/Miessence, 2010)

5 Reasons to Choose and Organic Farm-to-Table Thanksgiving Feast e: newsletter (Only Organic, November 2021)